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P R E F A C E.

THE Reader will perceive that the arrangement of this Volume differs in some degree from that of the preceding ones; the list of Premiums offered for the ensuing Session being now placed at the beginning, though hitherto it has made almost the last article of the book; and this has taken place, that the Volume may be published sooner than has been usual, and such persons as propose to become Candidates, be more early informed of the nature and conditions of the requisites for their several claims.

It must afford great pleasure to the members of the Society, as well as to every friend of the institution, to perceive the flourishing state of it; and that, under the class of Agri-

culture, which is deservedly placed the first, the claims made this year have been more numerous than during many years past, and particularly in the two great objects of encouragement, the Planting Trees, and Draining Land ; for although, under the article of planting, it appears, in this volume, that the number of trees of various kinds, for which rewards have this session been bestowed, amounts to about four hundred and ninety-one thousand planted, yet the whole number certified to the Society, amounts to no less than eight hundred and eight thousand four hundred and thirty-three.

The same may be said of draining land. In the following pages there appears only to have been drained thirty-eight acres, one rood, and twenty-four perches, by nine thousand and thirty yards of drains, that being the largest quantity received from any one candidate, to whom therefore the premium was adjudged ; but the whole number of yards of drains, for which claims were made this session,

P R E F A C E.

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feſſion, was no leſs than ſeventeen thouſand four hundred and fifty-eight yards; and the quantity of land drained thereby, upwards of one hundred and forty-ſeven acres.

In the following pages will be found ſome judicious obſervations on the uſes and advantages of the Cheſnut Tree, tending, it may be hoped, to reſtore the culture, in this kingdom, of that excellent and uſeful tree; the wood of which, it is well known, was in high eſtimation among our forefathers, as is evident from many of the buildings of great magnitude being conſtructed of it, and which, in many of its valuable properties, gives place to the Oak only. Other papers will alſo be found that furniſh uſeful obſervations on planting trees of different ſorts, and in various ſoils, which will throw light on that neceſſary and pleaſing branch of Agriculture.

Some further obſervations on the utility of Pruning Orchards, with hints on plant-

ing Fruit-trees, in addition to those printed in the Eleventh Volume, are also inserted, confirming the doctrine there laid down, and shewing the utility of the medicated Tar therein described. As this is a matter of great importance, the Society will at any future period be happy to receive accounts of what success may attend the practice, from any one who may think proper to adopt the methods therein recommended.

A Paper shewing the advantage of the Drill Husbandry, in the Culture of Wheat, is here inserted : by communications on this subject, thus from time to time laid before the Public, the long-agitated question on the comparative advantages of the Drill and broad-cast Culture of Grain, will, it is expected, by degrees be ascertained ; and of how much consequence that will be to the country in general, need not be mentioned.

In this Volume are also two Papers on the Culture and Cure of that valuable plant
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the true Rhubarb ; and there is now reason to believe the growth of it in this country is becoming so considerable, that we shall in a few years be able to supply enough for our consumption in medicine, and perhaps afford it at such price as may enable our manufacturers to apply it to other uses, in dying, callico-printing, &c.

On those very useful heads, Draining and improving Land lying waste, two Papers are inserted in the following pages ; and, as the advantages set forth in those papers clearly prove the utility of the practice, it is not to be doubted that they will tend in a high degree to forward and establish it.

Under the class of Chemistry in this volume is given an account, with a plate and description, of a Furnace, or Boiler, called by the ingenious Inventor an Evaporator.* By

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* Mr. Browne, of Derby, whose method of securing seeds from the depredation of mice, and other vermin, was printed in the Eleventh Volume of these Transactions, page 143.

this contrivance, the process for obtaining the solutions of various salts, as common Salt, Copperas, green, blue, and white, Sal Ammoniac, &c. in a state fit for crystallization, will be greatly expedited; and this is caused by the air, which actuates the fire, being made to pass over the surface of the boiling liquor, carrying with it the rising steam, thereby not only accelerating the evaporation, and, in consequence, shortening the work, and lessening the consumption of fuel and labour; but in many cases securing the operator and the neighbourhood from the effects of the disagreeable and oftentimes noxious effluvia that arise during the process. It is therefore justly presumed, that the introduction of boilers on this construction, among such works as are above alluded to, will be of great benefit and advantage.

Under this head also is inserted a letter from Robert Batson, of Limehouse, Esq. describing a method practised by him, for

P R E F A C E. ix

curing the Dry-Rot in Timber ; and which appeared, as far as those experiments went, to have answered the purpose intended. As this seems to be an increasing malady among the buildings in this country, every attempt to prevent, or cure it, is highly laudable ; and, should the method advised by Mr. Batson, be further tried by any persons, accounts of the success attending them will be thankfully received. It may not be amiss to mention that Quick Lime has been said to answer very well, when used instead of the anchor-smith's ashes recommended in Mr. Batson's letter.

This session Mr. George Blackman, of Hemming's-Row, having received both an honorary and pecuniary reward for discovering to the Society the method of preparing the Oil-Colour Cakes, invented by him, a full account of the ingredients made use of, and the manner of forming the Cakes, will be found in the following sheets ; and it is presumed, from the testimony of some
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very eminent artists, whose opinions are also published, that they may prove a valuable acquisition to the professors of painting, and particularly to those who may think proper to make use of oil-colours in any excursions into the country, where it might be inconvenient to carry pigments of that kind in the state they are usually sold.

In the class of Manufactures, the Society have this session received and rewarded two samples of Spinning ; the one, of Hemp, by a young Lady, who herself prepared the hemp for spinning ; and, having spun a quantity of yarn from it, a piece of cloth was manufactured, of a degree of fineness hitherto unattempted to be made from hemp in this kingdom ; and which may serve as a pattern for other young persons of her sex to imitate, and, if possible, excel. The other is the work of a servant at Kenilworth, near Coventry, who, having far excelled in the spinning of Flax, of a certain price, other persons of her own condition

dition in life in her neighbourhood, it has been thought proper to reward her with a small pecuniary bounty, to excite a laudable emulation among those of her station and condition.

Under the head of Mechanicks, the Reader will find in this Volume a description and plate of a new-constructed Water-Bucket, for raising water out of deep wells, which has been some years in use at a well upwards of three hundred feet deep, the property of the inventor. The advantages of this contrivance are, that the labour of the horses employed is diminished, the buckets and rope may be made lighter, and the danger attending the work much lessened. When these circumstances are considered, the utility of the machine will be evident; and there can be no doubt the erecting Water-Engines on this construction will take place, to the great advantage of the Public.

A plate and description is also inserted, in this volume, of a new-invented method of
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extending some bars which form a kind of Reel, and serve as the barrel of a Crane, whereby the velocity of the weight to be raised is adapted to the power employed in raising it; and, it is presumed, the principle on which the action of this machine is founded, will be of use in many other cases that have not yet been adverted to by the person from whom the model was received. An Essay also is inserted in this Volume, intended to shew an easy and practicable method of forming and preserving Standards of Weights and Measures deducible from each other, and which, it is presumed, if carried into full execution, will put an effectual stop to all future disputes on that subject.

As the several navigators to the South Sea had unanimously spoken in the highest terms, in commendation of the Bread-fruit produced in the islands of that immense ocean, the Society, so long since as the year 1777, offered a premium for the introduction of that fruit into the islands of
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the West-Indies, subject to the Crown of Great Britain ; and at length their wishes have been happily gratified by the persevering attention of Captain William Bligh, assisted by those ingenious botanists, Mr. William Viles, and Mr. Christopher Smith, whose names on this occasion ought also to be recorded, and the western world put in possession of what will hereafter secure to that part of the globe an inexhaustible fund of good, palatable, and wholesome food ; and it will appear, on perusal of the following sheets, that so large a quantity of the Bread-fruit trees has been introduced to the several West-India Islands, as will assuredly prevent any want of the fruit hereafter in those settlements.

The Premiums first offered in the year 1793, for planting Osiers, have succeeded most happily ; for, besides the fortunate Candidates, several others produced claims ; and such a spirit of emulation has arisen among the planters, that there is great reason to believe the growth of that useful
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plant will be much more attended to than it has been for some years past.

Some new Premiums have this session been offered ; and it is hoped that the ingenious will exercise their talents in obtaining them. The continual loss of fruit by blights, is too fatally known ; and the Society have now first offered a reward for the discovery of a method to prevent that calamity.

The inconveniences that constantly arise from the freezing of water in pipes, through which it is conveyed for the service of houses, has long and justly been complained of, and the Society have therefore now offered a reward for discovering a method whereby those inconveniences may be obviated ; and as many fatal accidents have happened by the horses employed in raising water out of deep wells, or other such like works, being under the necessity of turning about when the bucket or load is discharged, it has been thought proper to offer

a Premium for the discovery of an easy method whereby such danger may be avoided; and there is good reason to believe that, when this object is obtained, by the use of the Buckets described in Mr. Butler's paper; the raising water by Bucket-Engines will be as complete as can be wished for.

It is with singular satisfaction the Society contemplate the flourishing state of their finances, which enables them to repeat to the ingenious their invitation to submit to the inspection and encouragement of the Society any works that may have a tendency to promote the Arts, the Manufactures, and Commerce of these kingdoms, which will not only be sure to meet some honorary or pecuniary reward, but will secure to the Claimants that self-approbation which all ingenuous minds must feel at a consciousness of having contributed to the increase of the riches, credit, and honour, of their native country.